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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/088,644	HILLERMEIER ET AL.	
	Examiner	Art Unit	
	Russ Guill	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2-4,7-15,20-25,29-32,34-36 and 40-45* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2-4,7-15,20-25,29-32,34-36 and 40-45* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 March 2002* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This action is in response to a Request for Continued Examination filed May 27, 2008. Claims 2 – 4, 7 – 15, 20 – 25, 29 – 32, 34 - 36 and 40 – 45 are pending. Claims 2 – 4, 7 – 15, 20 – 25, 29 – 32, 34 - 36 and 40 – 45 have been examined. Claims 2 – 4, 7 – 15, 20 – 25, 29 – 32, 34 - 36 and 40 – 45 have been rejected.

2. **As previously recited, the Examiner would like to thank the Applicant for the well-presented response, which was useful in the examination process. The Examiner appreciates the effort to carefully analyze the Office Action, and make appropriate amendments.**

Continued Examination Under 37 CFR 1.114

3. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on May 27, 2008, has been entered.

Response to Remarks

4. Regarding all claims rejected under 35 U.S.C. § 112, first paragraph:

4.1. After further consideration, the rejections are withdrawn. While claim 7 appears to be an amalgam of at least two embodiments: paragraph [0017] and paragraphs [0021] – [0024] (Paragraphs [0021] – [0024] do not appear to support

simulating the technical system based on the result and the setting constants; and paragraph [0017] does not appear to support an optimizing step), the two embodiments appear to be linked because the required function calculation of paragraphs [0021] – [0024] (especially equation 1) appears to be the "simulating the technical system based on the result and the setting constants" of paragraph [0017]. In order to avoid possible issues under 35 U.S.C. § 112, first and second paragraphs, the Examiner suggests amending the claims to replace simulating the technical system with calculating the required function.

5. Regarding claim 7 rejected under 35 U.S.C. § 103:

5.1. Applicant's arguments have been fully considered, but are not persuasive, as discussed below.

5.2. The Applicant argues:

5.3. Beginning on page 17 of the November 26, 2007 Final Office Action, the Examiner correctly recognizes that *Microsim* fails to disclose or suggest at least, "simulating the technical system based on the result and the setting constants," as required by claim 7. The Examiner relies upon *Optimizer* to disclose this feature - directing Applicants' attention to pages 6-2 through 6-8. Applicants disagree.

5.4. As is evident from claim 7, "result" refers to "a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system," as set forth in claim 7.

5.5. According to pages 6-2 through 6-8 of *Optimizer,* three variable resistors RFc, Rbw, RGain are implemented as potentiometers and adjust center frequency, bandwidth, and gain of an active filter circuit shown in FIG. 6-1. In the context of *Optimizer,* results of adjustments to the variable resistors in the active filter circuit are the center frequency Fc, bandwidth BW and Gain. Contrary to the "result" of claim 7, however, the simulation of the active filter circuit in *Optimizer* is not performed *based on these results.* Therefore, contrary to the Examiner's allegation Optimizer does not disclose or fairly suggest at least, "simulating

the technical system based on the result and the setting constants," as required by claim 7.

5.6. Also contrary to the "result," of claim 7, the center frequency Fc, bandwidth BW and Gain in *Optimizer* are not in the form of an influence of the variable resistors RFc, Raw, Rom, on a technical system.

5.6.1. The Examiner respectfully replies:

5.6.2. The Examiner appreciates the Applicant's argument, but respectfully disagrees, as follows.

5.6.3. The phrase, "simulating the technical system", refers to calculating the value of the required function (please refer to the specification paragraphs [0021] - [0023]). The ordinary artisan would have recognized that the "required function" in the specification is a cost function or objective function. A "cost function" or "objective function" is a term in the art of simulation that corresponds to the "required function" as translated from the original German application. Thus, simulating the technical system refers to calculating the value of an objective function. The setting parameters are adjusted by the optimization in order to optimize the value of the required function (objective function).

5.6.4. The Applicant recites above, "In the context of *Optimizer*, results of adjustments to the variable resistors in the active filter circuit are the center frequency Fc, bandwidth BW and Gain. Contrary to the "result" of claim 7, however, the simulation of the active filter circuit in *Optimizer* is not performed *based on these results.*". The Examiner respectfully disagrees, as follows. On page 6-4 of Optimizer, the target values of the center frequency, bandwidth and gain are set to be 10, 1 and 10 respectively. The optimization process adjusts the values of the variable resistors (that is, the setting parameters) in order to achieve the target values. The

"result" of the setting parameters (the setting parameters being the values of the variable resistors) is the value of the center frequency, bandwidth and gain. Then the values of the center frequency, bandwidth and gain are used to calculate the value of an objective function (that is, a required function, and also known as the simulation of the technical system); the objective function is described on page 1-8, in the section "Performance", as the sum of the squares of the deviations from the target values. Pages 1-8 through 1-10 of Optimizer discuss an evaluation (*page 1-9, section Evaluation*) being an algorithm that computes a single numerical value, which is used as a measure of performance, which is the objective function used by the PSpice Optimizer. When PSpice Optimizer calculates the value of the PSpice Optimizer expression, the calculation process is simulating the technical system, in the meaning used by the specification. The PSpice Optimizer expression is composed of parameter values and constants (*page 1-10, section PSpice Optimizer expression*).

5.7. The Applicant argues:

5.8. *Croix* also fails to disclose or suggest at least, "simulating the technical system based on the result and the setting constants," as required by claim 7.

5.9. For at least the foregoing reasons, claim 7 is patentable over *Microsim*, *Optimizer* and Croix because, even in combination, the references fail to teach or suggest all features of claim 7.

5.9.1. The Examiner respectfully replies:

5.9.2. The Examiner agrees that Croix does not teach simulating the technical system based on the result and setting constants. However, as discussed above, claim 7 appears to be taught by the combination Microsim, Optimizer, and Croix, and thus the rejection is maintained.

5.10. The Applicant argues:

5.11. In response to Applicants' previous arguments, the Examiner states, "Croix appears to teach...[in] column 10, lines 8-10...four characterization points, which is a plurality of parameters." See Continuation Sheet of Advisory Action dated March 28, 2008. Regardless of whether this is true or not, Applicants continue to assert that the four characterization points, at most, constitute only a single set of parameters, but not a "plurality of sets of parameters," as set forth in claim 7. Therefore, the references still fail to disclose or fairly suggest determining an "influence of each of a plurality of sets of setting parameters on the technical system," by "checking the external source," as required by claim 7.

5.12. For at least the foregoing reasons, claim 7 is patentable over *Microsim in* view of *Optimizer* and further in view of *Croix*.

5.12.1. The Examiner respectfully replies:

5.12.2. The rejection of claim 7 recites Croix, column 5, lines 8 – 50, which teaches that a combination of a particular input transition time and a particular output load may be referred to as a characterization point, which is a plurality of parameters. Especially as discussed in column 5, lines 8 – 25, a plurality of sets of setting parameters are used to determine an influence on the technical system. However, the rejection has been enhanced to better teach the limitation.

5.12.3. Also, as recited in the previous Office action: Column 5, lines 8 – 50 appears to teach using SPICE to simulate a cell's operation at characterization points and creating a characterization table with the points (especially column 5, lines 8 - 26). This appears to satisfy the limitation, as recited above, determining an "influence of each of a plurality of sets of setting parameters on the technical system," by "checking the external source," as required by claim 7,

because SPICE is clearly an external source, and the characterization points are a plurality of sets of setting parameters

6. Regarding claims 9, 12 and 13 rejected under 35 U.S.C. § 103:

6.1. Applicant's arguments have been fully considered, but are not persuasive, as discussed below.

6.2. The Applicant argues:

6.3. Claims 9, 12 and 13 are patentable over *Microsim* in view of *Optimizer* and further in view of Croix for at least reasons somewhat similar to those set forth above with regard to claim 7. Claims 2-4, 10, 11, 14, 15, 20-25, 30-32, 34-36, and 41-43 are patentable at least by virtue of their dependency from claims 7, 9, 12 or 13.

6.3.1. The Examiner respectfully replies:

6.3.2. The rejections are maintained as discussed regarding claim 7 above.

7. Regarding claim 11 rejected under 35 U.S.C. § 103:

7.1. Applicant's arguments have been fully considered, and are persuasive. However, new rejections are made below.

7.2. The Applicant argues:

7.3. In addition to the arguments set forth below, claim 11 is also patentable for the following reasons. On page 22 of the November 26, 2007 Final Office Action, the Examiner rejects claim 11 stating **(emphasis** in original):

7.4. Microsim appears to teach determining, from the simulation of the technical system, the sensitivity of sets of parameters to changes in the setting constants **(pages 12-2**

and 12-3, section Parametric Analysis; and page xiii Chapter 13 Monte Carlo and Sensitivity/Worst-Case Analyses; and page 13-33, section Sensitivity Analysis).

7.5. The Examiner concludes that "it would have been obvious to determine, from the simulation of the technical system, the sensitivity of sets of parameters to changes in the setting constants." In doing so, however, the Examiner provides no rationale, let alone the requisite rationale, as to why such a determination would be obvious. See, MPEP § 2141(111) ('The key to supporting any rejection under 35 U.S.C. 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious...[rejections) on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. [citation omitted].") Consequently, the Examiner has failed to establish a *prima facie* case of obviousness with respect to claim 11.

7.6. Sections 12-2 and 12-3 of *Microsim* discuss Parametric Analysis. According to this portion of *Microsim,* Parametric Analysis "performs multiple iterations of a specified standard analysis while varying a global parameter, model parameter, component value, or operational temperature." Section 1333 discusses sensitivity analysis. In more detail, this portion of *Microsim* discusses an output file, which includes a percent change in a collating function and the sweep value at which the collating function is measured are given for each varied parameter. In sum, the sensitivity analysis in *Microsim is,* at most, merely an analysis of the sensitivity of the function to a parameter, which is determined by evaluating the function at plurality of values of the parameter. This portion of *Microsim,* however, is silent with regard to determining the sensitivity of *sets of parameters* to changes *in the setting constants*. To the contrary, *Microsim,* at most, discloses determining the sensitivity of a function to changes in values of a single parameter.

7.7. Therefore, *Microsim* fails to disclose or fairly suggest at least, "determining, from the simulation of the technical system, the sensitivity of sets of setting parameters to changes in the setting constants," as required by claim 11. *Croix* and *Optimizer* are also deficient with respect to this feature.

7.8. Therefore, claim 11 *is* patentable over *Microsim, Optimizer,* and *Croix* taken singly or in combination.

Specification

8. The disclosure is objected to because of the following informalities: Paragraphs [0033] and [0034] refer to "high-line plots". This appears to be a translation error from German because there does not appear to be a known term of "high-line plot". Appropriate correction is required.

Claim Objections

9. Claim 44 is objected to for the following minor informality: the claim recites in line 9, "an second influence". The phrase appears to mean, "a second influence".

Claim Rejections - 35 USC § 112

10. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

10.1. Claims 44 - 45 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

10.1.1. Regarding claim 44, the claim recites in lines 14 – 15, "simulating the power station based on the required function result and the setting constants". The specification does not appear to teach simulating a technical system based on the required function result; rather, the specification appears to teach that a technical system is simulated based on a result in the form of an influence of the

parameters as a function of the parameters and on the basis of a request to an external source. The simulation of the technical system is calculating the required function result. See paragraph [0007].

10.1.2. Regarding claim 44, the claim recites in lines 4 - 6, "determining a first result as a function of the setting constants, the first result being in the form of a first influence of the set of setting constants on the technical system". See paragraphs [0021] – [0023]. Briefly, the required function calculation is split into a part that comprises the constants and a part that comprises the influence of the parameters. However, the part that comprises the influence of the parameters must be determined before the constants can be applied. Equation 1 on page 5 is an operation of composition of functions, which requires the inner piece to be calculated before the outer piece. Thus, the claimed first result above cannot be calculated before an influence of the parameters as a function of the parameters and on the basis of a request to an external source is performed.

10.1.3. Regarding claim 44, the claim recites in line 13, "temporarily storing the required function result". While paragraph [0023] does recite storing the required function result, the intention of the invention is better described in paragraph [0007], which stores the result of an influence of the parameters on the technical system, so as to allow the result to be used again when a future request to the external source uses the same parameters. Further, the required function result has not yet been previously calculated in the claim, but the specification requires that the required function be calculated before it is stored.

10.1.4. Regarding claim 44, the claim recites in line 14, "simulating the power station based on the required function result and the setting constants". The specification appears to teach that "simulating the power station" is calculating

the required function result, thus the specification does not appear to support simulating the power station based on the required function result.

10.1.5. Dependent claim 45 has the same defects as the parent claim 44.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 2 - 4, 7, 9 - 15, 20 - 25, 30 - 32, 34 - 36 and 41 - 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Microsim ("MicroSim Pspice A/D & Basics+",

June 1997) in view of Croix (U.S. Patent No. 6,327,557), further in view of Optimizer ("MicroSim PSpice Optimizer", June 1997).

13.1.1. The art of Microsim is directed to the PSpice circuit simulation software (**page 1-2**).

13.1.2. The art of Optimizer is directed to a circuit optimization program integrated with other MicroSim programs, such as MicroSim PSpice circuit simulation (**page xiv**) described above.

13.1.3. The art of Croix is directed to building a circuit characterization cell for use in a Spice circuit simulator (**column 1, lines 1 - 65; and column 2, lines 1 - 16**). In summary, Croix describes simulating a circuit at multiple values of input parameters, and storing the resulting output values along with the input parameters in a lookup table. Croix then builds a Spice cell with the lookup table for use in a Spice simulation. During Spice simulation, the cell can simply take the input values to the cell and interpolate an output value (**column 5, lines 2-65**). This simulation process has the advantage that cells of the circuitry are characterized with higher speed relative to previous techniques.

13.1.4. The art of Microsim and the art of Croix are analogous art because they are both directed to circuit simulation using the Spice simulation software.

13.2. Regarding claim 7:

13.2.1. Microsim appears to teach:

13.2.2. A method for simulation of a technical system (*page 1-2, section "What is Pspice A/D*);

13.2.3. ~~wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source, the result of this check is temporarily stored, and~~ an ~~additional~~ influence is determined by extrapolation on the basis of the ~~temporarily~~ stored results (*page 6-33, sixth paragraph that starts with, "The table consists . . ", the sentence, "For values of EXPR outside the table's range, the device's output is a constant with a value equal to the entry with the smallest (or largest) input", which obviously teaches extrapolation of table values outside the range of the table*).

13.2.4. Microsim does not specifically teach:

13.2.5. Optimizing a set of setting parameters for a required function, the required function being based on the set of setting parameters and a first set of setting constants, the set of setting constants being static during the optimizing, and the set of setting parameters being for design and reaction of the technical system;

13.2.6. Determining a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system;

13.2.7. temporarily storing the result;

13.2.8. simulating the technical system based on the result and the setting constants;

13.2.9. wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source, the result of this check is temporarily stored, and an additional ~~influence is determined by extrapolation on the basis of the~~ temporarily ~~stored results~~.

13.2.10. Optimizer appears to teach:

13.2.11. Optimizing a set of setting parameters for a required function, the required function being based on the set of setting parameters and a first set of setting constants, the set of setting constants being static during the optimizing, and the set of setting parameters being for design and reaction of the technical system (*pages 1-8 thru 1-10, sections Performance, Evaluation and PSpice Optimizer Expression (especially note in Pspice Optimizer Expression, the use of constants); and pages 6-2 thru 6-4, please note that in figure 6-1 that resistor values for R1, R2, R3 are constants*);

13.2.12. Determining a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system (*page xiv, please note that the MicroSim Pspice Optimizer calls the MicroSim Pspice A/D simulator; and page 6-2 and page 6-8, it would have been obvious that the circuit in figure 6-1 was submitted to PSpice A/D for calculating a result*);

13.2.13. simulating the technical system based on the result and the setting constants (*pages 1-8 thru 1-10,*

sections Performance, Evaluation and PSpice Optimizer Expression (especially note in Pspice Optimizer Expression, the use of constants));

13.2.14. Croix appears to teach:

13.2.15. Determining a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system (*especially, column 5, lines 8 - 50; figure 8; see also the reference by Peter Meijer below for common knowledge in the art*);

13.2.16. temporarily storing the result (*especially, column 5, lines 8 - 50; figure 8*);

13.2.17. wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source (*especially, column 5, lines 8 - 50; figure 8; see also the reference by Peter Meijer below*), the result of this check is temporarily stored (*especially, column 5, lines 8 - 50*), and an additional influence is determined ~~by extrapolation~~ on the basis of the temporarily stored results (*especially, column 5, lines 8 - 50, especially lines 45 - 50, column 9, lines 55-67, and column 10, lines 1-35*).

13.2.18. The motivation to use the art of Croix with the art of Microsim would have been the benefits recited in Croix that cells of the circuitry are characterized with both higher speed and higher accuracy relative to previous techniques (**column 2, lines 10-16**), which would have been recognized by the ordinary artisan as a benefit because higher speed means reduced time for simulation.

13.2.19. The motivation to use the art of Optimizer with the art of MicroSim would have been the benefit recited in Optimizer that the program improves the performance of analog circuits (**page xiv, first paragraph**). The MicroSim reference also points to the Optimizer reference (**MicroSim, pages xxvi and xxviii**).

13.2.20. Further, the method of claim 7 was common knowledge in the art at the time of invention. Please see the references by Hood et al., and Davis (U.S. Patent Number 6381564) and Rai (U.S. Patent Number 6606612) below.

13.2.21. Obviousness must be determined in light of the knowledge of the ordinary artisan. The following references teach knowledge of the ordinary artisan:

13.2.21.1. Peter B.L. Meijer, "Fast and Smooth Highly Nonlinear Multidimensional Table Models for Device Modeling", March 1990, IEEE Transactions on Circuits and Systems, volume 37, number 3, pages 335 – 346; teaches the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source (*column 5, lines 8 - 50*), the result of this check is temporarily stored (*column 5, lines 8 - 50*), and an additional influence is determined on the basis of the temporarily stored results (*page 336, left-side column, second paragraph that starts with, "A growing interest . . .", "The table models approximate the device behavior, using a*

finite number of table points, which can be obtained from measurements or device simulations").

13.2.21.2. Rai (U.S. Patent Number 6606612) teaches simulating a system, saving the results, then using the saved results in a design optimization without having to re-simulate the system.

13.2.21.3. Davis (U.S. Patent Number 6381564) teaches (claim 7), simulating a system, saving the results, then using the saved results in a design optimization without having to re-simulate the system (*especially see figure 4*).

13.2.21.4. Srinivasan (U.S. Patent Number 6499129) teaches simulating a system, saving the results, then using the saved results when a future simulation is needed with the same parameters.

13.2.21.5. Sarah J. Hood et al., "Response Surface Methodology and Its Application in Simulation", 1993, 1993 Winter Simulation Conference Proceedings, pages 115 – 122; appears to teach claim 7. Please note the cost function on page 118, below figure 1, which at least has setting constants of 200 and 1200.

13.2.22. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Croix and the art of Optimizer with the art of Microsim to obtain the claimed invention.

13.2.23. **Regarding claim 9:**

13.2.24. Claim 9 is taught almost entirely as in claim 7 above. The differences are taught below.

13.2.25. MicroSim appears to teach:

13.2.26. the external source being an experiment (*page 6-33, third paragraph that starts with, "The ETABLE and GTABLE parts use a transfer function described by a table. These device models are well suited for use with measured data", where a device transfer function uses a table of measured data, which would obviously teach or suggest an experiment as a source. Please note that the claim does not appear to require an experiment to be performed at the time that the external source is checked; it appears that the experiment may be performed in advance and the experimental results stored for later queries*) .

13.2.26.1. In order to expedite the examination process, the art of Rai (U.S. Patent 6,606,612) also explicitly teaches an experiment as an external source. Further, it was old and well known in the art of power plant simulators to use steam tables of experimental values for calculations, as appears to be taught in the reference, "International Library of Technology", 1908, page 22.

13.2.27. Regarding claim 2:

13.2.28. Microsim appears to teach designing the technical system on the basis of the simulation (**page 1-2, section "What is PSpice A/D?", especially "software-based breadboard of your circuit that you can use to refine your design"**).

13.2.29. Regarding claims 3, 24 and 35:

13.2.30. Microsim appears to teach that the design process includes a change to the technical system (**page 1-2, section "What is PSpice A/D?", especially "software-based breadboard of your circuit that you can use to *refine* your design"; it would have been obvious that refining a design is a change**).

13.2.31. **Regarding claims 4, 14, 15, 25 and 36:**

13.2.32. Microsim does not specifically teach:

13.2.32.1. redetermining the influence of the parameters on the technical system by accessing the temporarily stored result.

13.2.33. Croix appears to teach:

13.2.33.1. redetermining the influence of the parameters on the technical system by accessing the temporarily stored result (**column 5, lines 65 – 67, and column 6, lines 1 – 7, and column 1, lines 10 – 67, and column 2, lines 1 - 10**).

13.2.34. **Regarding claims 20, 30 and 41:**

13.2.35. Microsim does not specifically teach that the external source is at least one of a simulator and an experiment.

13.2.36. Croix appears to teach that the external source is a simulator (**column 5, lines 8-27; the simulator Spice is used to calculate characterization values**).

13.2.37. **Regarding claims 10, 21, 31 and 42:**

13.2.38. Microsim does not specifically teach that the simulation is carried out using a plurality of results, without the external source.

13.2.39. Croix appears to teach that the simulation is carried out using a plurality of results, without the external source (**figure 9; and column 5, lines 8-27**).

13.2.40. Regarding claims 11, 22, 32 and 43:

13.2.41. Official Notice is taken that it was old and well known in the art of optimization and simulation, "determining, from the simulation of the technical system, the sensitivity of sets of parameters to changes in the setting constants". The motivation to use the knowledge of the ordinary artisan would have been to validate the model or to assess the usefulness of having better estimates of the setting constants (please see the following reference by James E. Ward, page 4, second paragraph). The references to support the Official Notice are:

13.2.41.1. James E. Ward et al., "Approaches to Sensitivity Analysis in Linear Programming", 1990, Annals of Operations Research, volume 27, number 1, pages 3 - 38, especially pages 3 - 4, section "Introduction". Please note that cx is an objective function which is a simulation with setting constants.

13.2.41.2. J. Sobieszczanski-Sobieski et al., "Multidisciplinary aerospace design optimization: survey of recent developments", 1997, Structural and Multidisciplinary Optimization, volume 14, number 1, pages 1 - 23, especially page 4, right-side column, last paragraph of section 2.3 System sensitivity analysis, "extend the concept of sensitivity analysis to an analysis of an optimum for sensitivity to the optimization constant parameters".

13.2.41.3. Microsim appears to teach determining, from the simulation of the technical system, the sensitivity of sets of parameters to changes in the setting parameters (**pages 12-2 and 12-3, section Parametric Analysis; and page xiii,**

Chapter 13 Monte Carlo and Sensitivity/Worst-Case Analyses; and page 13-33, section Sensitivity Analysis).

13.2.42. **Regarding claim 12:**

13.2.43. Microsim appears to teach:

13.2.44. an arrangement for simulation a technical system (*page 1-2, section "What is Pspice A/D*);

13.2.45. ~~a memory adapted to temporarily store the result; wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source, the result of this check is temporarily stored, and~~ an ~~additional~~ influence is determined by extrapolation on the basis of the ~~temporarily~~ stored results (*page 6-33, sixth paragraph that starts with, "The table consists . . ", the sentence, "For values of EXPR outside the table's range, the device's output is a constant with a value equal to the entry with the smallest (or largest) input", which obviously teaches extrapolation of table values outside the range of the table*).

13.2.46. Microsim does not specifically teach:

13.2.47. A processor unit configured to, Optimize a set of setting parameters for a required function, the required function being based on the set of setting parameters and a set of setting constants, the set of setting constants being static during the optimizing, and the set of setting

parameters being for design and reaction of the technical system;

13.2.48. Determine a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system;

13.2.49. simulate the technical system based on the result and the setting constants;

13.2.50. a memory adapted to temporarily store the result; wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source, the result of this check is temporarily stored, and an additional ~~influence is determined by extrapolation on the basis of the~~ temporarily ~~stored results~~.

13.2.51. Optimizer appears to teach:

13.2.52. A processor unit configured to, Optimize a set of setting parameters for a required function, the required function being based on the set of setting parameters and a set of setting constants, the set of setting constants being static during the optimizing, and the set of setting parameters being for design and reaction of the technical system (*pages 1-8 thru 1-10, sections Performance, Evaluation and PSpice Optimizer Expression (especially note in Pspice Optimizer Expression, the use of constants); and pages 6-2 thru 6-4, please note that in figure 6-1 that resistor values for R1, R2, R3 are constants*);

13.2.53. Determine a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system (*page xiv, please note that the MicroSim Pspice Optimizer calls the MicroSim Pspice A/D simulator; and page 6-2 and page 6-8, it would have been obvious that the circuit in figure 6-1 was submitted to PSpice A/D for calculating a result*);

13.2.54. simulate the technical system based on the result and the setting constants (*pages 1-8 thru 1-10, sections Performance, Evaluation and PSpice Optimizer Expression (especially note in Pspice Optimizer Expression, the use of constants)*);

13.2.55. Croix appears to teach:

13.2.56. Determine a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system (*column 5, lines 8 - 50*);

13.2.57. a memory adapted to temporarily store the result (*column 5, lines 8 - 50*);

13.2.58. wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source (*column 5, lines 8 - 50*)., the result of this check is temporarily stored (*column 5, lines 8 - 50*), and an additional influence is

determined ~~by extrapolation~~ on the basis of the temporarily stored results (*column 5, lines 8 - 50, especially lines 45 - 50, column 9, lines 55-67, and column 10, lines 1-35*).

13.2.59. The motivation to use the art of Croix with the art of Microsim would have been the benefits recited in Croix that cells of the circuitry are characterized with both higher speed and higher accuracy relative to previous techniques (**column 2, lines 10-16**), which would have been recognized by the ordinary artisan as a benefit because higher speed means reduced time for simulation.

13.2.60. The motivation to use the art of Optimizer with the art of MicroSim would have been the benefit recited in Optimizer that the program improves the performance of analog circuits (**page xiv, first paragraph**). The MicroSim reference also points to the Optimizer reference (**MicroSim, pages xxvi and xxviii**).

13.2.61. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Croix and the art of Optimizer with the art of Microsim to obtain the claimed invention.

13.2.62. **Regarding claim 13:**

13.2.63. MicroSim appears to teach:

13.2.64. A computer program medium on which executable instructions are recorded, the executable instructions causing a processor unit to execute a process of simulating a technical system (*page 1-2, section "What is Pspice A/D*)

13.2.65. ~~wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source, the result of this check is temporarily stored, and~~ an ~~additional~~ influence is determined by extrapolation on the basis of the ~~temporarily~~ stored results (*page 6-33, sixth paragraph that starts with, "The table consists . . ", the sentence, "For values of EXPR outside the table's range, the device's output is a constant with a value equal to the entry with the smallest (or largest) input", which obviously teaches extrapolation of table values outside the range of the table*).

13.2.66. Microsim does not specifically teach:

13.2.67. a first program segment configured to cause the processor unit to Optimize a set of setting parameters for a required function, the required function being based on the set of setting parameters and a first set of setting constants, the set of setting constants being static during the optimizing, and the set of setting parameters being for design and reaction of the technical system;

13.2.68. Determine a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system;

13.2.69. simulate the technical system based on the result and the setting constants;

13.2.70. a second program segment, adapted to cause the processor unit to temporarily store the result;

13.2.71. wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source, the result of this check is temporarily stored, and an additional ~~influence is determined by extrapolation on the basis of the~~ temporarily ~~stored results~~.

13.2.72. Optimizer appears to teach:

13.2.73. a first program segment configured to cause the processor unit to Optimize a set of setting parameters for a required function, the required function being based on the set of setting parameters and a set of setting constants, the set of setting constants being static during the optimizing, and the set of setting parameters being for design and reaction of the technical system (*pages 1-8 thru 1-10, sections Performance, Evaluation and PSpice Optimizer Expression (especially note in Pspice Optimizer Expression, the use of constants); and pages 6-2 thru 6-4, please note that in figure 6-1 that resistor values for R1, R2, R3 are constants*);

13.2.74. Determine a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system (*page xiv, please note that the MicroSim Pspice Optimizer calls*

the MicroSim Pspice A/D simulator; and page 6-2 and page 6-8, it would have been obvious that the circuit in figure 6-1 was submitted to PSpice A/D for calculating a result);

13.2.75. simulate the technical system based on the result and the setting constants (*pages 1-8 thru 1-10, sections Performance, Evaluation and PSpice Optimizer Expression (especially note in Pspice Optimizer Expression, the use of constants)*);

13.2.76. Croix appears to teach:

13.2.77. Determine a result as a function of the set of setting parameters and based on a request to an external source, the result being in the form of an influence of the set of setting parameters on the technical system (*column 5, lines 8 - 50*);

13.2.78. a memory adapted to temporarily store the result (*column 5, lines 8 - 50*);

13.2.79. a first program segment configured to cause the processor unit to temporarily store the result (*column 5, lines 8 - 50*)

13.2.80. wherein the influence of each of a plurality of sets of setting parameters on the technical system is determined by checking the external source (*column 5, lines 8 - 50*)., the result of this check is temporarily stored (*column 5, lines 8 - 50*), and an additional influence is determined ~~by extrapolation~~ on the basis of the temporarily stored results (*column 5, lines 8 - 50, especially lines 45 - 50, column 9, lines 55-67, and column 10, lines 1-35*).

13.2.81. The motivation to use the art of Croix with the art of Microsim would have been the benefits recited in Croix that cells of the circuitry are characterized with both higher speed and higher accuracy relative to previous techniques (**column 2, lines 10-16**), which would have been recognized by the ordinary artisan as a benefit because higher speed means reduced time for simulation.

13.2.82. The motivation to use the art of Optimizer with the art of MicroSim would have been the benefit recited in Optimizer that the program improves the performance of analog circuits (**page xiv, first paragraph**). The MicroSim reference also points to the Optimizer reference (**MicroSim, pages xxvi and xxviii**).

13.2.83. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Croix and the art of Optimizer with the art of Microsim to obtain the claimed invention.

13.2.84. Regarding claims 23 and 34:

13.2.85. Microsim appears to teach that a processor unit is further adapted to design the technical system on the basis of the simulation (**page xxvi, the unlabeled figure at the bottom of the page, the MicroSim PSpice Optimizer is shown as modifying the MicroSim PspiceA/D simulator; it would have been obvious that the optimizer is adjusting values of a technical system, which is performing design; and page xxviii, MicroSim PSpice Optimizer User Guide paragraph**).

13.3. **Claim 8** is rejected under 35 U.S.C. 103(a) as being unpatentable over Microsim ("MicroSim Pspice A/D & Basics+", June 1997) Croix (U.S. Patent No. 6,327,557), further in view of Optimizer ("MicroSim PSpice Optimizer", June 1997), further in view of Rai (U.S. Patent Number 6,606,612).

13.4. Please refer to claim 7 above for motivation and analogous art regarding MicroSim, Croix and Optimizer.

13.5. The art of Rai is directed to a general method of design optimization using composite surfaces with neural networks (*title and column 1, lines 25 – 30*).

13.6. The art of Rai and the art of MicroSim are analogous art because they both pertain to the art of optimizing a design (*Microsim, page xxvi, diagram at the bottom of the page, Microsim PSpice A/D is connected to an optimizer MicroSim PSpice Optimizer*).

13.7. The motivation to use the art of Rai with the art of would have been the benefit recited in Rai that significant cost savings have been realized by using neural nets to interpolate between measurements (*column 2, lines 50-55*).

13.8. Regarding **claim 8**:

13.8.1. Claim 8 is almost entirely taught as in claim 7 above. The differences are taught below.

13.8.2. Microsim does not specifically teach: an additional influence is determined on the basis of temporarily stored results using a neural network.

13.8.3. Rai appears to teach determining an influence from results using a neural network (*column 2, lines 50-55*).

13.9. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Rai and the art of Croix and the art of Optimizer with the art of Microsim to produce the claimed invention.

13.10. Claims 29 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Microsim ("MicroSim Pspice A/D & Basics+", June 1997) as modified by Croix and Optimizer as applied to **claims 2 - 4, 7, 9 - 15, 20 - 25, 30 - 32, 34 - 36 and 41 - 43** above, and further in view of Rai (U.S. Patent Number 6,606,612).

13.10.1. Microsim as modified by Croix and Optimizer teaches a method for simulation of a technical system, as recited in **claims 2 - 4, 7, 9 - 15, 20 - 25, 30 - 32, 34 - 36 and 41 - 43** above.

13.10.2. **Regarding claims 29 and 40:**

13.10.3. Microsim does not specifically teach that an additional influence is determined from the results using a neural network.

13.10.4. Rai appears to teach determining an influence from results using a neural network (*column 2, lines 50-55*).

13.10.5. The motivation to use the art of Rai with the art of Microsim as modified by Croix and Optimizer would have been the benefit recited in Rai that significant cost savings have been realized by using neural nets to interpolate between measurements (*column 2, lines 50-55*).

13.10.6. Therefore, as discussed above, it would have been obvious to the ordinary artisan at the time of invention to use the art of Rai with the art of Microsim as modified by Croix and Optimizer to produce the claimed invention.

13.11. Examiner's Note: Examiner has cited particular columns and line numbers in the references applied to the claims above for the convenience of the applicant. Although the specified citations are representative of the teachings of the art and are applied to specific limitations within the individual claim, other passages and figures may apply as well. It is respectfully requested from the applicant in preparing responses, to fully consider the references in their entirety as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

Allowable Subject Matter

14. Any indication of allowable subject matter for claims 44 - 45 is withheld pending resolution of the outstanding rejections.

Conclusion

15. The following reference is pertinent to the Applicant's specification:

15.1. Nichols (U.S. Patent Number 5347466) teaches simulation and optimization of a power generation plant.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Russ Guill whose telephone number is 571-272-7955. The examiner can normally be reached on Monday - Friday 10:00 AM - 6:30 PM.

17. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Rodriguez can be reached on 571-272-3753. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300. Any inquiry of a general nature or relating to the status of this application should be directed to the TC2100 Group Receptionist: 571-272-2100.

18. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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